Chemistry 141 Name

Martin Larter Quiz 3 (20 points) September 8, 2015

1. (10 points) Potassium superoxide, KO2, reacts with carbon dioxide to preform potassium carbonate and oxygen gas.

4 KO2 (s) + 2 CO2 (g) 🡪 2 K2CO3 (s) + 3 O2 (g)

This reaction makes potassium superoxide useful in a self-contained breathing apparatus. Using the ICE table method to calculate (slight variation of Problem 3.112 from book):

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | 4 KO2 (s) + | 2 CO2 (g) 🡪 | 2 K2CO3 (s) | + 3 O2 (g) |
| I |  |  |  |  |
| Δ |  |  |  |  |
| E |  |  |  |  |
|  |  |  |  |  |

* 1. The theoretical mass of oxygen gas produced.
  2. The mass of potassium superoxide and carbon dioxide remaining.

1. (10 points) For the following half reaction (ideas from lab lecture)

CrO4-2(aq) 🡪 CrO2-1(aq)

* 1. Balance the following half reaction in acidic solution.
  2. What is the oxidation number of CrO2-1(aq) \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
  3. What type of agent is this reaction (oxidizing or reducing) and identify the agent

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